# ZCR

Mettre photos avec un signal en temps

MFCCs

Juste expliquer ce que ca fait, et voir s’il y a des choses à plotter mais je ne pense pas

Plotter le periodogramm e

# Gaussian Mixture Model

Plotter les différents trucs

Plotter les peaks

# Linear Predictive Coding (LPC)

Qu’est ce que ça fait : [httpn ://www.clillac-arp.univ-paris-diderot.fr/\_media/groupes/arp/05\_spectre\_lpc.pdf](http://www.clillac-arp.univ-paris-diderot.fr/_media/groupes/arp/05_spectre_lpc.pdf)

<http://www.ivoronline.com/Science/Signals/LPC%20-%20Linear%20Predictive%20Coefficients/LPC%20-%20Linear%20Predictive%20Coefficients.pdf>

Je sais pas trop ce qu’il y a a afficher avec ca

<https://en.wikipedia.org/wiki/Linear_predictive_coding>

**Linear predictive coding** (**LPC**) is a tool used mostly in [audio signal processing](https://en.wikipedia.org/wiki/Audio_signal_processing) and [speech processing](https://en.wikipedia.org/wiki/Speech_processing) for representing the [spectral envelope](https://en.wikipedia.org/wiki/Spectral_envelope) of a [digital](https://en.wikipedia.org/wiki/Digital_data) [signal](https://en.wikipedia.org/wiki/Signal_(information_theory)) of [speech](https://en.wikipedia.org/wiki/Speech_communication) in [compressed](https://en.wikipedia.org/wiki/Data_compression) form, using the information of a [linear](https://en.wikipedia.org/wiki/Linear_prediction) [predictive model](https://en.wikipedia.org/wiki/Predictive_modelling).[[1]](https://en.wikipedia.org/wiki/Linear_predictive_coding#cite_note-1)[[2]](https://en.wikipedia.org/wiki/Linear_predictive_coding#cite_note-2) It is one of the most powerful speech analysis techniques, and one of the most useful methods for encoding good quality speech at a low bit rate and provides extremely accurate estimates of speech parameters.

# Line Spectral Frequencies (LSF)

Idem

# Spectral centroid

<https://pdfs.semanticscholar.org/08d3/677361238990860fb529eb4fa006534e0f05.pdf> The spectral centroid is commonly associated with the measure of the brightness of a sound. It indicates at which frequency the energy of a spectrum is centered upon, by evaluating its center of gravity.

It is calculated as the weighted mean of the frequencies present in the signal, with their magnitudes as the weights (eq …).

Attention mettre juste somme sur k (pas de N)

Here, F [k] is the amplitude corresponding to bin k in Discrete Fourier Transform spectrum.